



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,584	03/04/2002	Matthew S. Ryskoski	2000.075500	5029

23720 7590 06/30/2004

WILLIAMS, MORGAN & AMERSON, P.C.  
10333 RICHMOND, SUITE 1100  
HOUSTON, TX 77042

EXAMINER

WALLING, MEAGAN S

ART UNIT PAPER NUMBER

2863

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/090,584

Applicant(s)

RYSKOSKI, MATTHEW S.

Examiner

Meagan S Walling

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-16 and 18-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 5, 7, 9, 14-16, 18, 21, 23, 25 and 30-33 is/are rejected.
- 7) ☐ Claim(s) 3, 4, 6, 8, 10-13, 19, 20, 22, 24 and 26-29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 2, 5, 7, 9, 14-16, 18, 21, 23, 25, and 30-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Freed et al. (US 6,691,068).

Regarding claims 14 and 33, Freed et al. teaches processing and a means for processing a workpiece in a process flow (column 2, lines 35-37); collecting and a means for collecting workpiece state trace data for the workpiece during its processing in the process flow (column 7, lines 18-21); generating and means for generating a quality profile of the workpiece based on the workpiece state trace data (column 17, lines 36-40); and periodically updating and means for periodically updating the workpiece state trace data and updating any associated quality profile as the workpiece progressed through the process flow (column 2, lines 26-29).

Regarding claims 2 and 18, Freed et al. teaches collecting metrology data associated with the workpiece (column 1, lines 42-45).

Regarding claims 5 and 21, Freed et al. teaches collecting defect data associated with the workpiece (column 9, lines 20-22).

Regarding claims 7 and 23, Freed et al. teaches collecting process data associated with the processing of the workpiece in the process flow (column 2, lines 38-41).

Regarding claims 9 and 25, Freed et al. teaches generating at least one quality characteristic metric associated with the workpiece (column 17, lines 36-40).

Regarding claims 15 and 31, Freed et al. teaches processing a semiconductor device (column 4, lines 41-43).

Regarding claims 16 and 32, Freed et al. teaches processing at least one of a microprocessor, a memory device, a digital signal processor, and an application specific integrated circuit (column 1, lines 17-18).

Regarding claim 30, Freed et al. teaches a plurality of tools configured to process a workpiece in a process flow (column 2, lines 35-37); a quality monitor configured to collect workpiece state trace data from the workpiece during its process in the process flow (column 7, lines 18-21), generate a quality profile of the workpiece based on the workpiece state trace data (column 17, lines 36-40), and periodically update the workpiece state trace data and update the associated quality profile as the workpiece progresses through the process flow (column 2, lines 26-29).

#### ***Allowable Subject Matter***

Claims 3, 4, 6, 8, 10-13, 19, 20, 22, 24, and 26-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the indication of allowability of claims 3 and 19 is the inclusion of the limitation of measuring at least one of a transistor gate critical dimension, a process layer

Art Unit: 2863

thickness, a particle contamination count, and a transistor active region dimension. It is this limitation that has not been found, taught, or suggested in the prior art that makes these claims allowable.

The primary reason for the indication of allowability of claims 4 and 20 is the inclusion of the limitation of identifying at least one of a missing pattern defect, an extra pattern defect, a particle contamination defect, and an electrical arc damage defect. It is this limitation that has not been found, taught, or suggested in the prior art that makes these claims allowable.

The primary reason for the indication of allowability of claims 8 and 24 is the inclusion of the limitation of measuring at least one of an implant dose and energy, and an anneal temperature, time, and energy. It is this limitation that has not been found, taught, or suggested in the prior art that makes these claims allowable.

The primary reason for the indication of allowability of claims 10 and 26 is the inclusion of the limitation of generating at least one of yield characteristic metric, a film resistivity metric, a film capacitance metric, a defect density metric, and a feature dimension metric. It is this limitation that has not been found, taught, or suggested in the prior art that makes these claims allowable.

The primary reason for the indication of allowability of claims 11 and 27 is the inclusion of the limitation of determining the quality characteristic based on the collected workpiece state trace data and an equation based model. It is this limitation that has not been found, taught, or suggested in the prior art that makes these claims allowable.

The primary reason for the indication of allowability of claims 12 and 28 is the inclusion of the limitation of determining the quality characteristic based on the collected workpiece state

Art Unit: 2863

trace data and an empirical model. It is this limitation that has not been found, taught, or suggested in the prior art that makes these claims allowable.

### ***Conclusion***

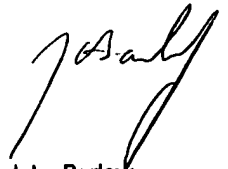
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meagan S Walling whose telephone number is (571) 272-2283.

The examiner can normally be reached on Monday through Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

msw

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800